dispensing a plurality of pathology differentiating agents on a sample, wherein said pathology differentiating agents interact to alter an optical signal produced by said sample, and measuring said altered optical signal.

Please add new claims 17-81 as follows:

17. The method of claim 1, wherein said pathology differentiating agents interact to produce an additive effect on said optical signal.

18. The method of claim 1, wherein said pathology differentiating agents interact to reduce an intensity of said optical signal.

19. The method of claim 1, wherein said optical signal is a light spectrum.

20. The method of claim 19, wherein said light spectrum is a fluorescent spectrum.

21. The method of claim 1, wherein said optical signal is produced by an endogenous chromophore.

22. The method of claim 21, wherein said endogenous chromophore is a flourophore.

23. The method of claim 1, wherein said pathology differentiating agents are selected from the group consisting of acetic acid, formic acid, propionic acid, butyric acid, Lugol's iodine, Shiller's iodine, methylene blue, toluidine blue, and indigo carmine.

24. The method of claim 1, wherein said plurality of pathology differentiating agents are dispensed substantially simultaneously.

25. The method of claim 1, wherein said pathology differentiating agents are dispensed sequentially.

26. The method of claim 1, wherein said optical signal is measured over a predetermined time.

27. The method of claim 1, wherein at least one member of said plurality of

pathology differentiating agents alters pH of said sample.

28. The method of claim 1, wherein at least one member of said plurality of pathology differentiating agents is selected from the group consisting of osmotic agents and ionic agents.

29. A method for monitoring effects of pathology differentiating agents on a sample, the method comprising the steps of: dispensing a pathology differentiating agent on a sample, and measuring a change in response to said pathology differentiating agent in an optical signal from an endogenous chromophore in said sample.

30. The method of claim 29, wherein said endogenous chromophore is a flourophore.

31. A method for monitoring effects of a pathology differentiating agent on a sample, the method comprising the steps of: dispensing a pathology differentiating agent on a sample, providing an automated triggering signal to initiate a measurement period relative to said dispensing step, and measuring a temporal evolution of an optical signal observed from said sample during said measurement period.

32. The method of claim 31, wherein said triggering signal is provided substantially simultaneously with said dispensing step.

33. The method of claim 31, wherein said triggering signal is provided after said dispensing step.

34. The method of claim 31, wherein said measuring step comprises measuring said temporal evolution at least one predetermined time relative to said triggering signal.

35. The method of claim 1 or 31, wherein said dispensing step comprises dispensing said pathology differentiating agent or agents as a mist in a predefined pattern on said tissue.

36. The method of claim 35, wherein said pattern is substantially circular.

37. The method of claim 35, wherein said pattern is substantially annular.

38. The method of claim 35, wherein said mist is a controlled volume.

39. The method of claim 35, wherein said dispensing occurs at a controlled rate.

40. A method for monitoring the effects of a pathology differentiating agent on a sample, the method comprising the steps of: dispensing a pathology differentiating agent on a sample, capturing a plurality of sequential images of said sample during a measurement period, automatically aligning a subset of said plurality of images to spatially correlate said subset, and measuring a temporal evolution of an optical signal from said subset of spatially correlated images.

41. The method of claim 40, wherein said aligning step comprises aligning said subset to compensate for relative motion between said sample and an optical device.

42. The method of claim 40, wherein said aligning step comprises aligning said subset to compensate for relative motion between a first portion of said sample and a second portion of said sample.

43. The method of claim 40, wherein said measuring step is performed at predetermined times relative to said dispensing step.

44. The method of claim 40, wherein said sample is selected from the group consisting of cervical tissue, skin, colorectal tissue, and gastric tissue.

45. The method of claim 1, wherein said optical signal is approximated by a decay function.

46. The method of claim 21 or 29, wherein said endogenous molecule is selected from the group consisting of NADH, collagen, elastin, flavins, hemoglobin, and porphyrins.

47. The method of claim 19, wherein said spectrum is produced at least in part by light scattering properties of said tissue.

48. A method of diagnosing disease in a patient, the method comprising the steps of: dispensing a plurality of pathology differentiating agents on a tissue, wherein the pathology differentiating agents interact to alter an optical signal produced by the tissue, measuring said altered optical signal, and providing a diagnosis based upon said altered optical signal.

49. A method of diagnosing disease in a patient, the method comprising the steps of: dispensing a plurality of pathology differentiating agents on a tissue; determining whether said pathology differentiating agents alter an optical signal produced by the tissue; and providing a diagnosis based upon whether said optical signal is altered.

50. The method of claim 48, wherein said pathology differentiating agents interact to produce an additive effect on said optical signal.

51. The method of claim 48, wherein said pathology differentiating agents interact to reduce an intensity of said optical signal.

52. The method of claim 48, wherein said optical signal is a light spectrum.

53. The method of claim 52, wherein said light spectrum is a fluorescent spectrum.

54. The method of claim 48, wherein said optical signal is produced by an endogenous chromophore.

55. The method of claim 54, wherein said endogenous chromophore is a fluorophore.

56. The method of claim 54, wherein said pathology differentiating agents are selected from the group consisting of acetic acid, formic acid, propionic acid, butyric acid, Lugol's iodine, Shiller's iodine, methylene blue, toluidine blue, and indigo carmine.

57. The method of claim 48, wherein said plurality of pathology differentiating agents are dispensed substantially simultaneously.

58. The method of claim 48, wherein said plurality of pathology differentiating agents are dispensed sequentially.

59. The method of claim 48, wherein said optical signal is measured over a predetermined time.

60. The method of claim 48, wherein at least one member of said plurality of pathology differentiating agents alters pH of said sample.

61. The method of claim 48, wherein at least one member of said plurality of pathology differentiating agents is selected from the group consisting of osmotic agents and ionic agents.

62. A method of diagnosing disease in a patient, the method comprising the steps of: dispensing a pathology differentiating agent on a tissue, measuring a change in response to said pathology differentiating agent in an optical signal from an endogenous chromophore in said tissue, and providing a diagnosis based upon said change.

63. The method of claim 62, wherein said chromophore is a fluorophore.

64. The method of claim 48, wherein said tissue is selected from the group consisting of skin, cervical tissue, epithelial tissue, and colorectral tissue.

65. A method of diagnosing disease in a patient, the method comprising the steps of: dispensing a pathology differentiating agent on a tissue, providing an automated triggering signal to initiate a measurement period relative to said dispensing step, measuring a temporal evolution of an optical signal observed from said tissue during said measurement period, providing a diagnosis based upon said temporal evolution.

66. The method of claim 65, wherein said triggering signal is provided substantially simultaneously with said dispensing step.

67. The method of claim 65, wherein said triggering signal is provided after said dispensing step.

68. The method of claim 65, wherein said measuring step comprises measuring said temporal evolution at least one predetermined time relative to said triggering signal.

69. The method of claim 48 or 65, wherein said dispensing step comprises dispensing said pathology differentiating agent or agents as a mist in a predefined pattern on said tissue.

70. The method of claim 69, wherein said pattern is substantially circular.

71. The method of claim 69, wherein said pattern is substantially annular.

72. The method of claim 69, wherein said mist is a controlled volume.

73. The method of claim 69, wherein said dispensing occurs at a controlled rate.

74. A method for diagnosing disease in a patient, the method comprising the steps of: dispensing a pathology differentiating agent on a tissue, capturing a plurality of sequential images of said tissue during a measurement period, aligning a subset of said plurality of images to spatially correlate said subset, measuring a temporal evolution of an optical signal from said subset of spatially correlated images, and providing a diagnosis based on said temporal evolution.

75. The method of claim 74, wherein said aligning step comprises aligning said subset to compensate for relative motion between said sample and a spectral observation device.

76. The method of claim 74, wherein said aligning step comprises aligning said subset to compensate for relative motion between a first portion of said sample and a second portion of said sample.

77. The method of claim 74, wherein said measuring step is performed at predetermined times relative to said dispensing step.

78. The method of claim 74, wherein said tissue is selected from the group consisting of cervical tissue, skin, colorectal tissue, and gastric tissue.

79. The method of claim 48, wherein said optical signal is approximated by a decay function.

80. The method of claim 54 or 62, wherein said endogenous molecule is selected from the group consisting of NADH, collagen, elastin, flavins, hemoglobin, and porphyrins.

81. The method of claim 52, wherein said spectrum is produced at least in part by light scattering properties of said tissue.